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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/646,906 | 10/10/2000 | Mitsunori Nagashima | P100806-0000 | 5977 |

7590 08/29/2002

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| | |
|------------------|--------------|
| EXAMINER | |
| VORTMAN, ANATOLY | |
| ART UNIT | PAPER NUMBER |
| 2835 | |

DATE MAILED: 08/29/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/646,906

Applicant(s)

NAGASHIMA, MITSUNORI

Examiner

Anatoly Vortman

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 July 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-4, are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant's disclosure in view of GB/2,302,451 to Shirakawa et al., (Shirakawa).

Regarding claim 1, the Applicant admitted ("Prior Art" Fig. 3A and 3B) that it has been known in the art at the time the invention was made to use a mount structure for thermal fuse (34) on circuit board (31), comprising:

a circuit board (31) having a surface where a predetermined circuit (for an electronic component (32)) is formed; said electronic component (32) attached to the one surface of said circuit board (31); and

a thermal fuse (34) provided on said one surface of said circuit board (31) in a close proximity to said electronic component (32), responding to the temperature of said electronic component (32) via heat conducting insulating member (33) filling the separation between said electronic component (32) and said thermal fuse (34) for breaking said predetermined circuit, but did not disclose an opening in said circuit board, wherein said electronic component (32) and

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said thermal fuse (34) are arranged across said opening and on opposite surfaces of said circuit board (31).

Shirakawa disclosed (Fig. 2) a mounting arrangement for electronic components (1 and 2) on a circuit board (3), said circuit board (3) having a through opening (9), wherein said electronic component (1) is attached to one surface of the circuit board (3) to extend across said through opening (9), and another electronic component (2) provided on the other surface of said circuit board (3) to enter said through opening (9), wherein an insulating member (4) is filling said opening (9).

Since the mounting arrangement disclosed by "Prior Art" Fig. 3A and 3B of the present invention and the invention of Shirakawa are from the same field of endeavor (mounting arrangements for electronic components on a circuit board), the purpose of mounting the electronic components across the opening and on opposite sides of the circuit board disclosed by Shirakawa would be recognized in the prior art mounting arrangement depicted on Fig. 3A and 3B of the instant application.

It would have been obvious to a person of ordinary skill in the electronic device and fuse arts at the time the invention was made to modify said prior art mounting arrangement depicted on Fig. 3A and 3B of the instant application according to the teachings of Shirakawa by providing said circuit board (31) with a through opening, by placing said electronic component (32) across said opening and by placing said thermal fuse (34) on the other surface of said circuit board (31) to enter said through opening for responding to the temperature of said electronic component (32) through a heat conducting filler (33), in order to reduce the size (i.e. the height) of the assembly (for motivation, please see Shirakawa, p.3, lines 4+; and p.8, lines 12+).

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Also, regarding claim 1, the Examiner believes that a following case law would be applicable: "It is noted that where a part of a device may be relocated without modification to the operation of the device (emphasis added), such a relocation is considered to have been within the skill of the art". *In re Japikse*, 86 USPQ 70 (1950).

Regarding claim 2, the Applicant admitted that said heat conducting insulating member (33) is a silicone resin (instant application, last line of page 1).

Regarding claim 3, the "Prior Art" Fig. 3B of the instant application depicts a through hole in the circuit board (31), wherein said thermal fuse (34) is electrically connected to said predetermined circuit via said through hole (by leads (35)).

Regarding claim 4, the "Prior Art" Fig. 3A and 3B of the instant application depict a rod-shaped thermal fuse (34).

Response to Arguments

3. In previous Office Action (paper # 5), while referring to the disclosure of GB/2,302,451 to Shirakawa et al. in the body of rejection, the Examiner erroneously used wrong reference name (EP/0732107 to Saito et al.). In order to correct the aforementioned error, the second non-final action is presented therein, which uses the correct reference of GB/2,302,451 to Shirakawa et al. in the body of the rejection. Thus, all arguments submitted by Applicant in the response filed on 07/26/02 are mute in view of new grounds of rejection.

Conclusion

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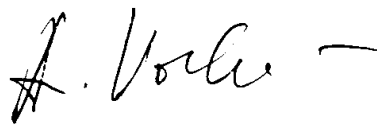
4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anatoly Vortman whose telephone number is 703-308-7824.

The examiner can normally be reached on 9:30-6:00, Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Darren Schuberg can be reached on 703-308-4815. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-3431 for regular communications and 703-305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.

A.V.
August 27, 2002



Anatoly Vortman
Primary Examiner
Art Unit 2835